

30 September 2020

Joseph Lloyd MuckRock News DEPT MR 70328 411A Highland Avenue Somerville, MA 02144

Reference: F-2019-01181

Dear Requester:

This letter is a final response to your 11 March 2019 Freedom of Information Act (FOIA) request for records on Kosmos 954 (Russian: Kocmoc 954), a reconnaissance satellite launched by the Soviet Union in 1977. We processed your request in accordance with the FOIA, 5 U.S.C. § 552, as amended, and the CIA Information Act, 50 U.S.C. § 3141, as amended.

We determined that 12 documents, consisting of 78 pages, can be released in segregable form with deletions made on the basis of FOIA exemptions (b)(1) and (b)(3). Additional deletions were made on material that is not responsive to your request (marked "NR Record" for "Not Responsive Record"). Copies of the documents are enclosed. Additional material was determined to be currently and properly classified and must be denied in its entirety on the basis of FOIA exemptions (b)(1) and (b)(3). Exemption (b)(3) pertains to information exempt from disclosure by statute. The relevant statutes are Section 6 of the Central Intelligence Agency Act of 1949, as amended, and Section 102A(i)(l) of the National Security Act of 1947, as amended.

As the CIA Information and Privacy Coordinator, I am the CIA official responsible for this determination. You have the right to appeal this response to the Agency Release Panel, in my care, within 90 days from the date of this letter. Please include the basis of your appeal.

Please be advised that you may seek dispute resolution services from the CIA's FOIA Public Liaison or from the Office of Government Information Services (OGIS) of the National Archives and Records Administration. OGIS offers mediation services to help resolve disputes between FOIA requesters and Federal agencies. Please note, contacting CIA's FOIA Public Liaison or OGIS does not affect your right to pursue an administrative appeal.

To contact CIA directly or to appeal the CIA's response to the Agency Release Panel:	To contact the Office of Government Information Services (OGIS) for mediation or with questions:
Information and Privacy Coordinator Central Intelligence Agency Washington, DC 20505 (703) 613-3007 (Fax) (703) 613-1287 (CIA FOIA Public Liaison / FOIA Hotline)	Office of Government Information Services National Archives and Records Administration 8601 Adelphi Road – OGIS College Park, MD 20740-6001 (202) 741-5770 (877) 864-6448 (202) 741-5769 (Fax) / ogis@nara.gov

If you have any questions regarding our response, you may contact the CIA's FOIA Hotline at (703) 613-1287.

Sincerely,

Mark Lilly

Information and Privacy Coordinator

Enclosures

18 NOVEMBER 1977

COSMOS 954 ORBIT CONTINUES TO DECAY

November 1977).

Cosmos 954, a radar ocean reconnaissance satellite (RORSAT), has an apparent malfunction

If the Soviets are unable to boost the satellite's nuclear power supply into the usual 500-nm orbit, it appears that the spacecraft will reenter in the first quarter of 1978. In the event of an attitude control system malfunction, the satellite might decay in late December or January. These judgments refine, somewhat, those presented in our initial report. (See WIDR for 8

(b)(3)

(b)(1) (b)(3)

(b)(1)

(b)(3)

Top Secret

4

223

35071/77

	Top Seese	(b)
	18 NOVEMBER 1977	
		(b
•		
•	If the attitude control system fails, the satellite will start tumbling and boost into the disposal orbit will no longer be possible. With the increased drag that would result, the satellite might decay in late December or January. Otherwise, it should remain in	
	orbit two or three months longer.	(b

C06863657

Approved for Release: 2020/09/28 C06863657



Top Secret (b)(3)

540-4.15 164 Cogras

Weapons Intelligence Daily Review

25 January 1978

Top Secret

WI WIDR 78-017J

25 January 1978

Copy

C

TOP Seen

(b)(3)

OFFICE OF WEAPONS INTELLIGENCE

Weapons Intelligence Daily Review

25 JANUARY 1978

RORSAT ENTERS IN CANADA

on 24 January Cosmos 954, the Soviet radar ocean reconnaissance satellite (RORSAT) reentered the earth's atmosphere over western Canada.

visual

sightings were reported by residents of the Pine Point community just south of Great Slave Lake which, although sketchy, correlate with the reentry of Cosmos 954. Although we are unable at this time to determine if any fragments survived reentry

(b)(1) (b)(3)

(b)(3)

(b)(1)

(b)(3) (b)(1)

Of primary concern is the extent to which the nuclear reactor broke up during reentry and what fragments, if any, impacted on earth. We believe the reactor is of the Romashka type (see figure 2). This system uses 49 ka of U-235.

We believe there is a high probability that the reactor broke up during reentry. However, the graphite fuel disks (see figure 3) could have survived. The high altitude dispersion of the fuel would pose a minimum health hazard; fine radioactive particles reaching the ground would also pose a minimal health hazard. Multiple fragments reaching the earth's surface increase the hazard potential to a severe level. Should the Romashka fuel disks impact intact, the debris would be lethal within a ten foot radius.

You Secret

Report No.

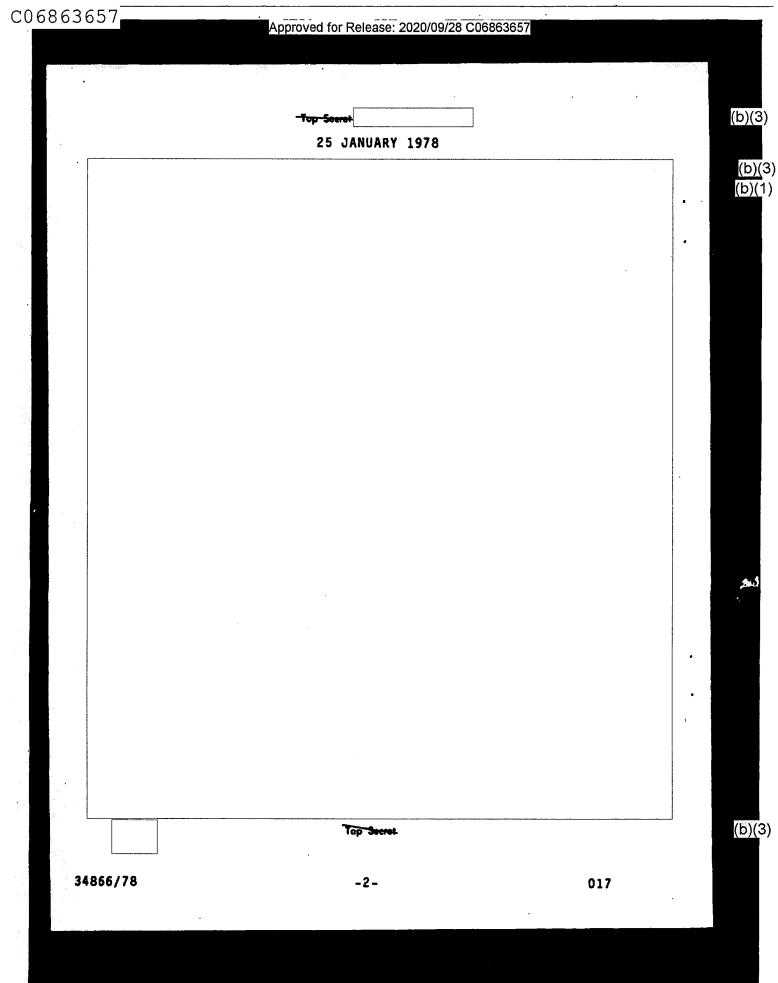
34866/78

-1-

017

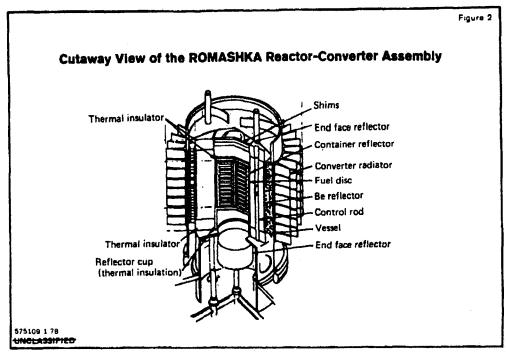
(b)(3)

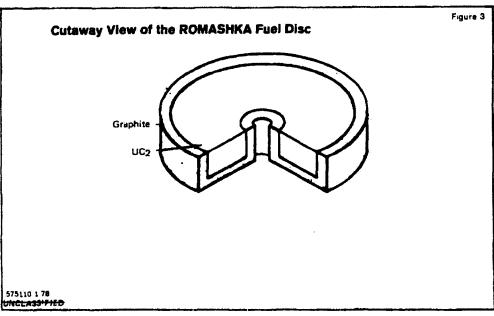
(b)(3)



25 JANUARY 1978







34866/78

-3-

017



Top Secret (b)(3)

16 9 16 9

Weapons Intelligence Daily Review

8 March 1978

Top Secret
WI WIDR 78-046J

Copy

()



(b)(3)

(b)(1) (b)(3)

(b)(3) (b)(1)

(b)(3)

OFFICE OF WEAPONS INTELLIGENCE

Weapons Intelligence Daily Review

8 MARCH 1978

CUSMOS 954 -- A SUMMARY

Cosmos 954, a nuclear powered radar ocean reconnaissance satellite (RURSAT) launched on 18 September 1977, reentered the atmosphere over northern Canada on 24 January 1978. To date, at least 10 pieces of the satellite have been located, one of which is highly radioactive.

Cosmos 954 was launched two days after the launch of another RORSAT, Cosmos 952. (Normally, the Soviets launch RORSATs in pairs in the same orbital plane.)

	Cosmos 95	2 and 954	collected	data i	in a	cooperative	role
	against s	urface ve	essels				
	100						
٢	Marie Control of the			elikar i variationi kilokolomia variati (1927 - 1924).	, management of a control or over	r. o' ammendament of the state	
							[-
							ì
L					NAME OF THE OWNER O		
					,		

34895/78

ob seciei-

-1-

Report No.

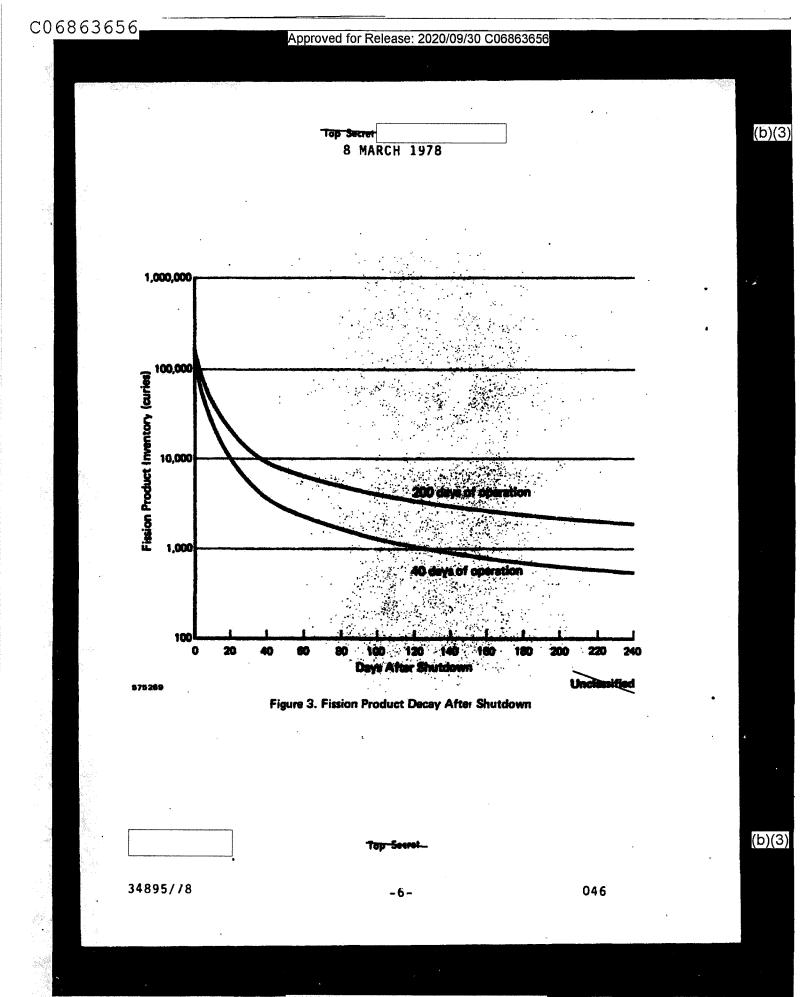
046

6863656	Approved for Release: 2020/09/30 C06863	656
,	Top Secret	
	8 MARCH 1978	
a)*		
£ .	,	
		•
·		
M		
,		
		·
		Secret
\$76267 2-78 CIA	Top Secret	
24000	,	
34895//8	-2-	046
	į	

C06863656	<u> </u>	Approved for Release: 2020/09/30 C06863656	
		Top Secret 8 MARCH 1978	(b)(3
	,		. (b)(3 (b)(1)
		On 6 January, Cosmos 954 began to tumble, accelerating its rate of orbital decay. It then was apparent that the Soviets would be unable to boost its nuclear reactor into a higher orbit. We do not know why Cosmos 954 began to tumble. It may have depleted its supply of attitude control gas or it may have, as stated by TASS, undergone a fast depressurization due to a collision "with some other object of natural or artificial origin."	
	-		(b)(3
		Top-Secret	(b)(
	34895/78	-3- 046	tur et f

Approved for Release: 2020/09/30 C06863656

Approved for Release: 2020/09/30 C06863656



Top Secret

8 MARCH 1978

(b)(3)

(b)(1)

(b)(3)

(b)(3)

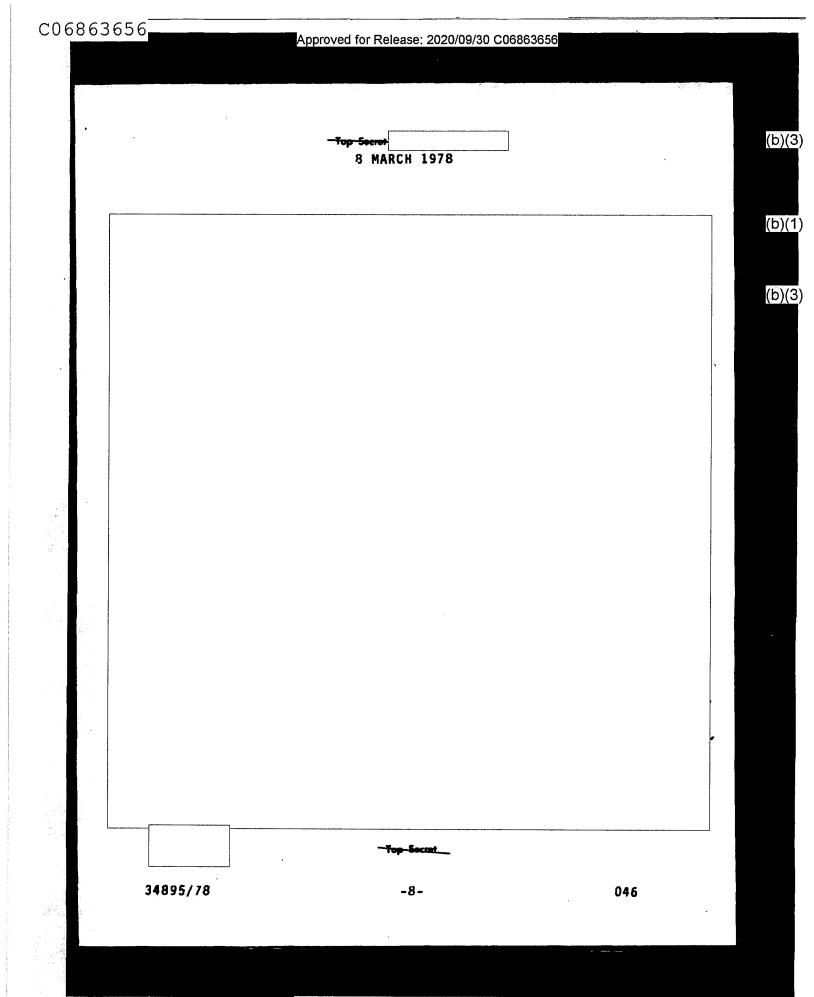
In the last few years, there have been a long one. In the last few years, there have been numerous failures in the program; however, Cosmos 954 was the only vehicle which failed to boost its nuclear payload into a disposal orbit. In spite of its long development program, these recent ROKSAT failures lead us to question this satellite system's reliability. It is possible that subtle, undetected changes or improvements to various subsystems have been made to update the system, causing the erratic demonstrated lifetimes. Despite the recent failures, we expect the RORSAT to continue to be used in controlled situations to monitor US and Allied exercises.

Top Secret

046

34895/78

-7-



34895/78

-9-

046

(b)(1)

(b)(3)

(b)(1)

C0686365	Approved for Release: 2020/	09/30 C06863656	
70 A			
	Top Secret 8 MARCH 1978		(b)(3
			(b)(
	Chemical, biological and radiological exercises by Soviet and non-Soviet Warsaw Pact forces, possibly in preparation for Cosmos 954's reentry	16-19 Jan 78 .	
			(b)(
			(b)(
		•	
			(5)(c)
	34895/78 -10-	046	(b)(3

C0	68636	56	Approved for	Release: 2020/0	9/30 C06863656			
			Top Sec					(b)(3)
			8 1	MARCH 1978				
								(b)(3)
								(b)(1)
	• .							-
	•							·
	,				•			
						,		
						٠	,	
	•				•			
			•					
1								
				Tap Secret				(b)(3
j							046	
		34895/78		-11-			U40	

		5 DECEMBER 1	977		
STAIU	S OF SUVIET ROR	SAT		-	(1) (2)
•	in the star	ovember, there ha tus of Cosmos 954 ance satellite (R	. a radar ocean	icant change	
	boosted from this reentering excess of the supply. We mechanism d	their missions. Delieve contains om an altitude of prevents the nuc the atmosphere f he half life of believe that th esigned to start y into a higher	the nuclear reac about 140 nm to lear materials for over 500 year the estimated numer to sequence to	venicle tor) was about 500 rom s, well in clear power allsafe	
•					
#Fe		Top Secret			

		・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・・
		the state of the s
	the state of the s	
i		(1-)(0
	Top Secret	(b)(3
		(-)
	0	TARREST CARR
	8 NOVE	EMBER 1977

SOUTER BORSAT SHEFFERS A MAJOR MALFUNCTION

Top Socret.		(b)(3)
	*	(b)(3)
		(b)(1)
We believe these satellites carry a failsafe mechanism to ensure that the spacecraft can boost its nuclear power supply into a higher orbit, although we do not know what criteria are necessary to activate this failsafe device. Unless this maneuver occurs, the radioactive material absard fosmos 97% may recote: the atmosphere as early as December of this year.	ets	
major malfunction that may have occurred		(b)(3) (b)(1)
Preliminary data indicate that Cosmos 954, a radar ocean reconnaissance satellite (RORSAT), suffered a		

35063/77

-5-

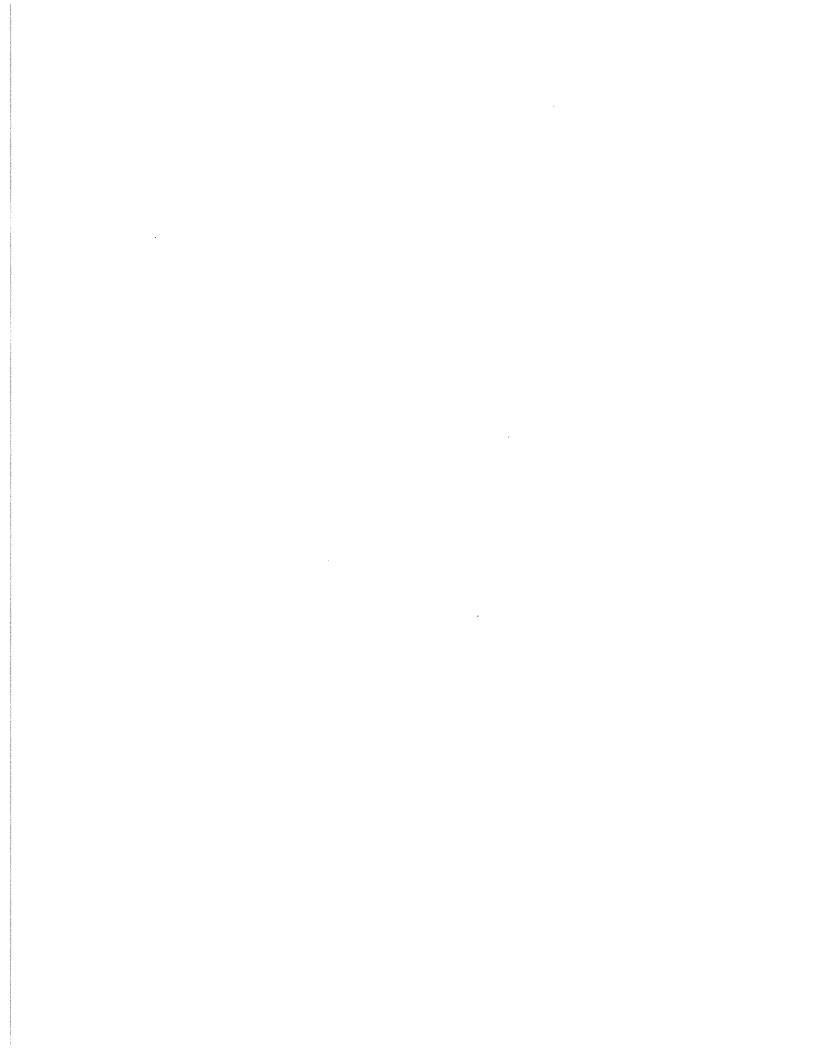
215

Surprise Street Street			(b)(3)
	Top Secret		(~)(-)
	8 NOVEMBER 1977		
; ;	At the end of a RORSAT's collection of the satellite moves to a higher onm), while the remainder stays in the soon decays. We believe these space a nuclear device and that it is thing into a higher orbit.	he low orbit and	(b)(1) (b)(3)
	RORSAT has a failsafe device. If t Cosmos 954 includes the failsafe me satellite will reenter the atmosphe	chanism, then the	
[we would expect a RORSAT to reenter as 30 to 60 days.	the atmosphere, in as little	(b)(3)
	as 50 to 00 days.		(b)(1)
	Cosmos 954 was launched on 18 Septe another RORSAT, Cosmos 952. The traplaced into the same orbital plane	wo satellites were	(b)(1) (b)(3)
	Pairing the satellites in this mans second satellite to follow up on revehicle (at higher latitudes). The limited information on the speed attarget ships.	eturns from the linst is would provide	(b)(3) (b)(1)
	Top Secret		(b)(3)
35063/77	-3-	214	

C ₀	6	8	6	3	6	5	9
\sim	$\mathbf{\circ}$	\sim	\sim	~	\mathbf{v}	\sim	~

Approved for Release: 2020/09/28 C06863659

•	Top Secret	
	8 NOVEMBER 1977	
·		·





Top Secret		ı
	(1	o)(3)

National Intelligence Daily

Tuesday 23 January 1979

Top Secret

CO NID 79-0191X

23 January 1979

Copy 348

Top Secret	(b)(3)
Contents	
Situation Reports	
Iran	(b)(1)
	(D)(1)
Briefs and Comments	
Tanzania-Uganda: Tanzanian Attack 5	
	(b)(1)
Palestinians: Assassination	,
China: Allocation of Grain Imports 8	
	(b)(1)
Namibia: South African Response	
	(b)(3)
USSR ~ East Germany: Oil Investment 10	(b)(1)
Special Analyses	
Iran: Paralyzed Economy	L
USSR-Romania: Ceausescu's New Challenge 14	1
Overnight Reports	7

i	Top Secret	(b)(3) (b)(3)

Top Secret	
	(b)(3)

Canada-USSR

According to the US Embassy in Ottawa, Canada today will ask the USSR for \$6,041,174.70 (Canadian money) in compensation for damage caused by the Cosmos 954 nuclear-powered satellite when it crashed on Canadian soil a year ago tomorrow. The amount being requested does not include costs incurred by the US in connection with the incident. The US had officially left that decision solely up to Canada, and Ottawa yesterday informed the US that only Canadian costs would be cited.

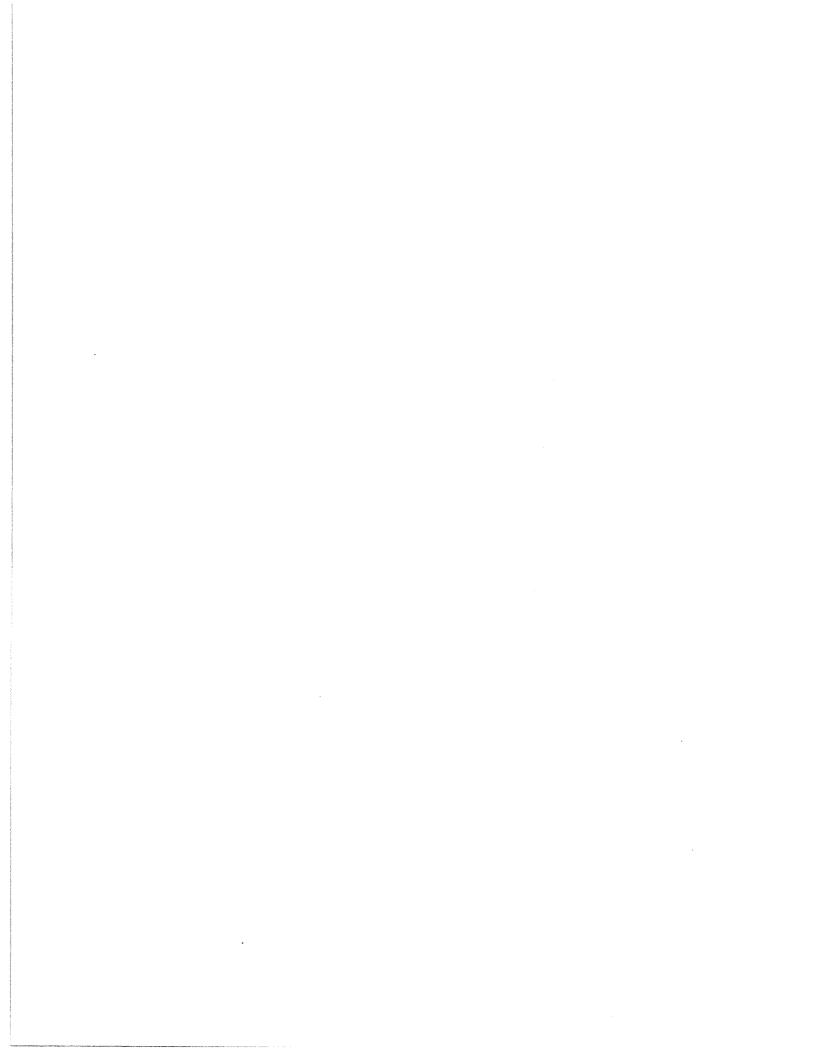
the US that only Canadian costs would be cited. (b)(3)

NR Record

--continued

19

Top Secret



37

(b)(3)

7 February 1978

MEMORANDUM

SUBJECT: Reaction to the Cosmos 954 Accident

The Nato allies, other than Canada and West Germany, have said little about the Cosmos 954 accident and its implications. Canadian officials spoke highly of US actions and objected to Soviet behavior. West Germany was critical of both the US and the USSR. Of the other countries informed by the US, Japan protested the incident to the Soviets and wants the UN to examine ways to prevent such accidents; Australia and New Zealand have made no comments.

Spain and South Korea--neither informed--are questioning the advantages of their ties with the US. Sweden, on the other hand, was not critical of the US, but delivered a strong protest to the USSR. Eastern Europe generally followed the Soviet line, although Poland emphasized that the incident demonstrated US-Soviet cooperation and detente.

Countries Informed by the US

Canadian Prime Minister Trudeau has been extremely laudatory of US aid to Canada. He said "the Americans were very forthcoming...went beyond their obligation as partners in NORAD. They did it as friends; they did it as neighbors; and we are very very grateful for it."

Defense Minister Danson

reported in the House of Commons that "I am perfectly satisfied that the prime minister, myself and our staffs were kept fully informed at each stage of the operation...Cooperation has been complete with the Americans."

The Canadians have complained that the Soviets should have informed Canada of a potential re-entry problem in advance. Canada is now assessing the USSR's legal obligations under the four existing international space conventions, and the defense minister stated that Canada will press

RP M 78-10052

(b)(3)

(b)(1)

(b)(3)

....

SECRET

a claim on the Soviet Union for the cost of the search and the recovery of the satellite. The USSR will be notified of the recovery only when official identification of the pieces is completed. Soviet offers to send technical personnel were not accepted.

The general media reaction toward the US was favorable although there was some criticism that the US did not notify Canada early there was some criticism that the US did not notify Canada early enough. The press highlighted, in particular, cooperation between enough. The press highlighted, in particular, cooperation between the US and Canada in their airborne radioactivity monitoring effort. Newscasts were generally critical of the USSR for failing to inform Canada.

The West German government tried to ally public concern by minimizing the risk, asserting it had adequate information about the satellite, and suggesting the consequences of the accident will have to be examined in "competent international forums." Initially, government spokesmen said that West Germany was informed about the problem by both the US and the USSR.

The German press was quite critical of the Soviet Union.

On January 31, the influential Frankfurter Allgemeine Zeitung published an extensive commentary--probably officially inspired--which called the US information policy on the incident "strange." It accused Dr. Brzezinski of playing down the undesirable consequences of the satellite's disintegration and said the US was treating the "other big power" with special care. This commentary implied the US should tell the allies more about the search for the debrist the US should tell the allies more about the search for the debrist than simply what aid it was giving to Canada. The article concluded that international agreement is required to "rule out absolutely that satellites may carry radioactive material, either as a weapon or as an energy generator."

The conservative <u>Die Welt</u> insisted that the interests of the "satellite have nots" <u>must be taken more into consideration</u>. Both newspapers said that Bonn had informed neighboring states of the peril, with the Frankfurt newspaper naming Switzerland, Austria, and Spain.

The \underline{UK} and \underline{France} made no official comments and their media gave the incident only spotty coverage with little commentary. The \underline{Danes} and the \underline{Dutch} commented briefly on the accident at the NATO political

-2-

SECRET

committee session on January 31. The Dutch representative expressed his appreciation for US notification and commented that his government would like NATO to consider how information about future incidents could be exchanged so that precautions could be taken. The Danish representative asked whether the allies intended to protest to the USSR about the lack of prior warning of the dangers the satellite posed. The Danish government has announced that it intends to inform the USSR that Denmark would have appreciated advance Soviet notification that the satellite was in difficulty.

Official Italian concern focused primarily on fears about radio-activity and the scientific conclusions that could be drawn from the incident. Italy was put on a three-day nuclear alert, including tests for radioactivity. One commentator deplored the technological gap which makes Italy dependent on the "science, resources and technical protection of another country, the United States." In a press interview, the chairman of the National Nuclear Physics Institute commented that because the satellite was nuclear powered and the US had abandoned nuclear propulsion in space 10 years ago, the USSR is now technologically 10 years behind the US.

Japan was pleased with the US warning and with US willingness to consult fully. In lodging a protest with Moscow on the incident, Tokyo demanded that the Soviets provide the details of the accident, procedures for preventing a recurrence, and information about other Soviet satellites now in orbit. The government's action is designed in part to respond to popular sensitivity about nuclear issues. The incident prompted Japan to press publicly for the UN to consider ways to prevent satellite accidents

Countries Not Informed by the US

South Korean concern over the incident focused on the question of how Washington selected the countries to be given advance notification. Officials in Seoul felt once again that Korea was excluded from the circle of priority US interests.

Immediately after the news broke, the <u>Spanish</u> Ministry of Foreign Affairs received a flood of press inquiries about whether Spain had been advised in advance by the US and if not, why not. Spanish media interest remained intense for several days, with criticism focusing on the US role.

-3-

SECRET

(b)(1) (b)(3)

The Soviets were clearly more culpable, but at least Moscow was consistent and did not warn anybody. The US, on the other hand, warned NATO countries but did not inform Spain, in spite of the important bilateral treaty between the two countries. The inference was that Spain is a second class ally.

(b)(1)

(b)(3)

In Austria Chancellor Bruno Kreisky made a statement on the fall of the satellite which acknowledged previous information but refused to name his informant. He also said that his information had been confirmed through the Austrian embassy in Moscow. Kreisky claimed that Austria had mobilized a team of experts, probably in an effort to forestall public concern.

The press in <u>Costa Rica</u> has criticized the USSR for not revealing the mission of the <u>Cosmos</u> satellites, pointing out "the danger posed by certain military equipment that has been rotating around the earth."

China has not commented officially on the satellite crash. A Communist controlled newspaper in Hong Kong claimed that as the result of the incident "we have become the victim of US-Soviet contention in space." The official Chinese news agency has limited its coverage to factual reports of the incident and has replayed Western statements criticizing the USSR.

The <u>East European</u> countries have given only light media coverage to the accident. For the most part, they initially limited reporting to a replay of the January 24 <u>Tass</u> statement. Subsequently, the Poles commented that the incident was handled well by all concerned parties and that this is a good example of US-Soviet cooperation and the detente process. Similarly, Budapest commented favorably on President Carter's proposal for a ban on nuclear-powered satellites and gave objective reportage to the US-Soviet cooperation handling of the incident. The

-4-

SECRET

Czechs and the East Germans, in contrast, played up an alleged Western propaganda effort aimed at exaggerating the radioactive dangers involved; East Berlin radio stressed, in this connection, that the West Germans were particularly at fault. Bucharest radio on February 4 repeated the commentary made by Soviet Academician Sedov and other East European media will probably do the same.

The Yugoslav <u>Tanjug</u> correspondent in Moscow, in addition to quoting from the <u>Tass</u> statement, added that "after this incident, the public will probably follow more carefully the moment when the Soviet space supply satellite "Progress-1" re-enters the atmosphere and burns." Expectedly, Belgrade has linked the accident with the need for increased efforts toward international disarmament and the UN Special Session on Disarmament of which they were initial sponsors.

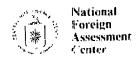
-5-

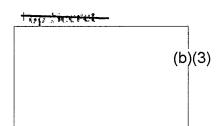
SECRE I

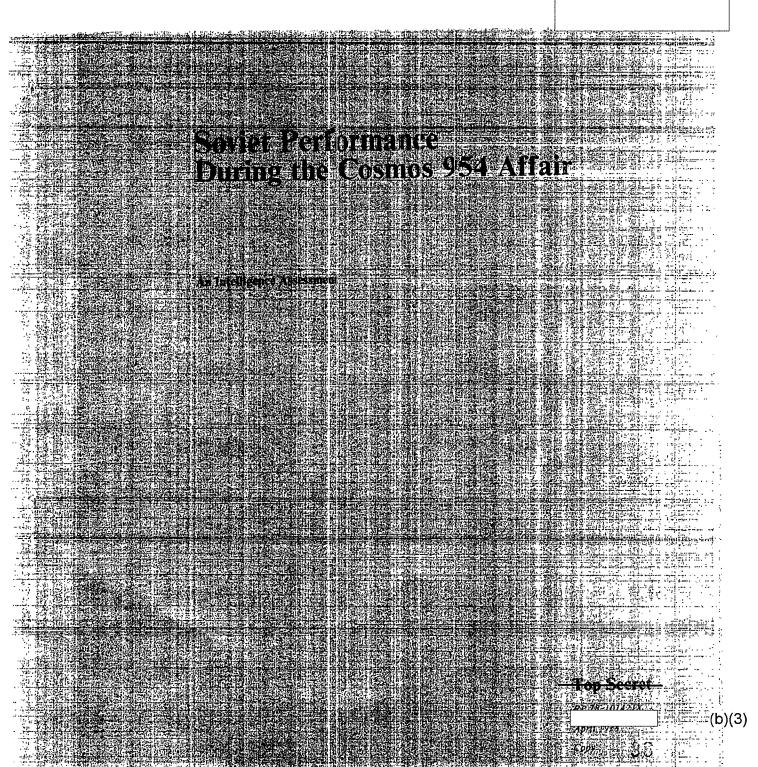
SUBJECT: Reaction to the Cosmos 954 Accident

(b)(3)

SECRET







Warning Notice Sensitive Intelligence Sources and Methods Involved (WNINTEL)

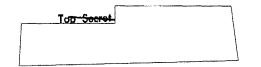
NATIONAL SECURITY INFORMATION
Unauthorized Disclosure Subject to Criminal Sanctions

DISSEMINATION CONTROL ABBREVIATIONS Not Releasable to Foreign Nationals NOFORN-Not Releasable to Contractors or NOCONTRACT-Contractor/Consultants Caution—Proprietary Information Involved PROPIN-NFIB Departments Only NFIBONLY-Dissemination and Extraction of Information ORCON-Controlled by Originator This Information has been Authorized for REL . . . -Release to . . . No Dissemination Beyond Main Addresses NODIS-

Approved for Release: 2020/09/28 C06167875

(b)(3)

Top Sec	(b)(3)
NOTE	•
This study, requested by the Assistant to the President for National Security Affairs, describes and evaluates how the USSR reacted to its loss of control over Cosmos 954, a military reconnaissance satellite powered by a nuclear reactor, and to the satellite's atmospheric reentry, which scattered fragments on Canadian soil. Particular attention is paid to the period after our notification of official concern to the USSR.	
	(b)(3) (b)(1)



(b)(3)

Soviet Performance During the Cosmos 954 Affair

Central Intelligence Agency National Foreign Assessment Center April 1978

Key Judgments

We do not know to what extent the Soviet political leaders, as opposed to the technical experts, were aware of Cosmos 954 before our demarche of 12 January.

Cosmos 954 was the twelfth in a series of Soviet reconnaissance satellites, all powered by nuclear reactors, that have been used since 1971 to supply intelligence data on US warships.

- The leaders probably had been briefed, most likely around the beginning of the program in 1971, on the overall program and its use of nuclear reactors.
- Soviet intelligence undoubtedly was aware of the intense US interest in these satellites. Soviet intelligence officials also almost certainly believed that we were aware of Cosmos 954's nuclear reactor and that we knew about the satellite's troubles.
- We simply have no way of knowing, however, whether the political leaders had been apprised before our demarche of their own intelligence services' estimates regarding our knowledge, or whether they were specifically briefed on the troubles of Cosmos 954.

There are three basic possibilities concerning the extent of the Soviet leaders' advance knowledge and appreciation:

— First possibility: That the leaders had been told nothing about the problems of Cosmos 954 prior to our demarche. The critical event that should have caused the technicians to alert the leaders was the onset of tumbling on 6 January, which made the satellite's atmospheric reentry inevitable. Yet for various practical reasons, includ-

7
iii
Top See



ing Brezhnev's poor health, the top political leaders may not have been briefed before our demarche only six days later (with a weekend included in the six days).

- Second possibility: That the leaders were fully informed about the satellite and appreciated the potential political implications involved, but chose to "cross their fingers" and to count on the high probability that reentry would not cause serious international repercussions. They would have wanted to avoid unnecessary international embarrassment or panic; this approach fits the pattern of Soviet behavior in other "no win" situations.
- -- Third possibility: That the Soviet leaders were aware, at least in general terms, of Cosmos 954's troubles, but did not fully appreciate the potential political implications involved or anticipate the intensity of our interest in the problem.

The third possibility is in our judgment the most likely. On the one hand, we find it difficult to accept the view that the top leaders were not briefed at all on the difficulties of Cosmos 954, and on the other we believe that if the Soviet leaders had appreciated the implications and anticipated our interest, they would have undertaken the special observation and precautionary measures that they did in fact later adopt.

Our demarche spurred immediate internal decisionmaking activity in Moscow, aimed at marshaling relevant facts and preparing a reply, and extraordinary military-technical actions reflecting new high-level political attention.

The Soviets were probably appreciative that the United States approached them quietly and nonpolemically, thus reinforcing the principle of primary US-Soviet responsibility for an esoteric subject involving high technology and politics. The nature of our approach probably added to the administration's modest stock of good faith in Moscow, and the Soviets may have concluded that our action helped prepare them to deal with post-reentry problems.

In the future there may be more involvement by the Soviet political leadership or other nontechnical groups in decisions on technical matters in order to anticipate possible international political implications.

This incident is not likely to lead the Soviets to stop using reactorpowered satellites in the future, and they will seek to preserve the largest possible leeway for continued space use of nuclear power.

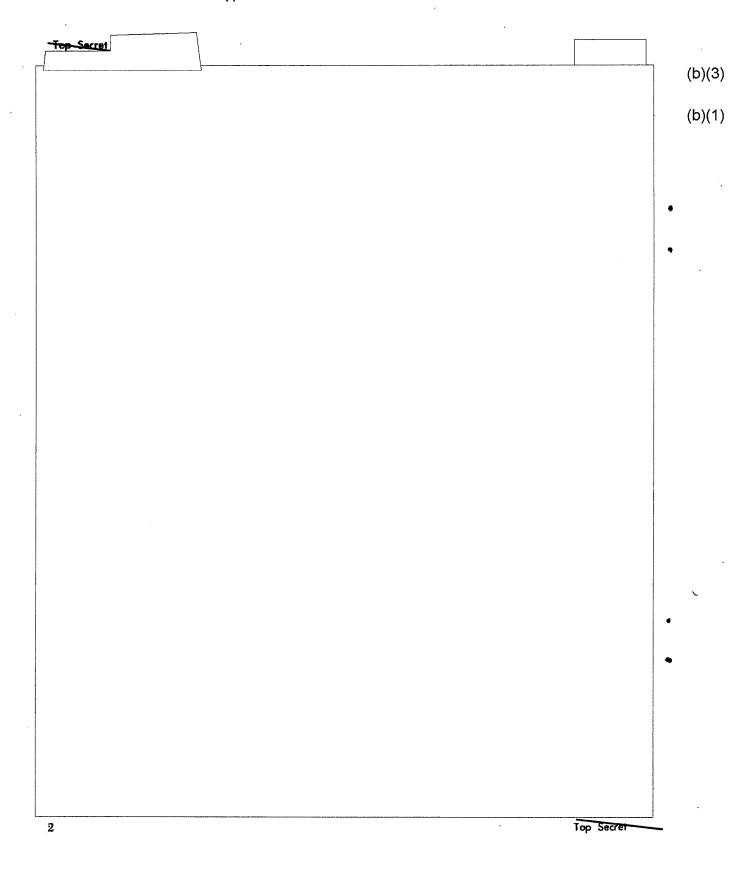
iv	
Top Secret	
tob sector	

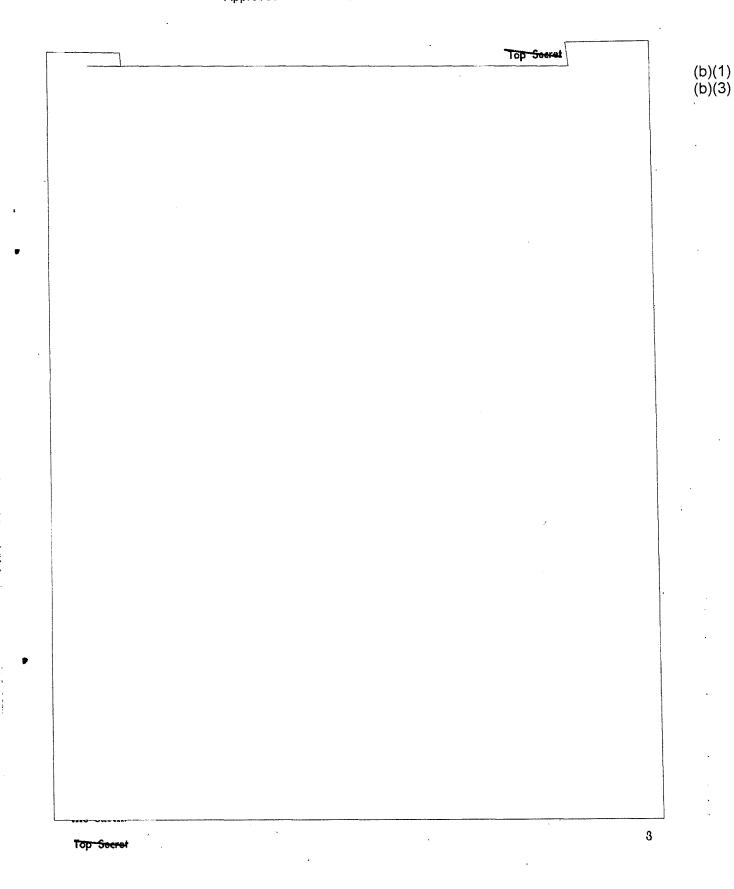
(b)(3)

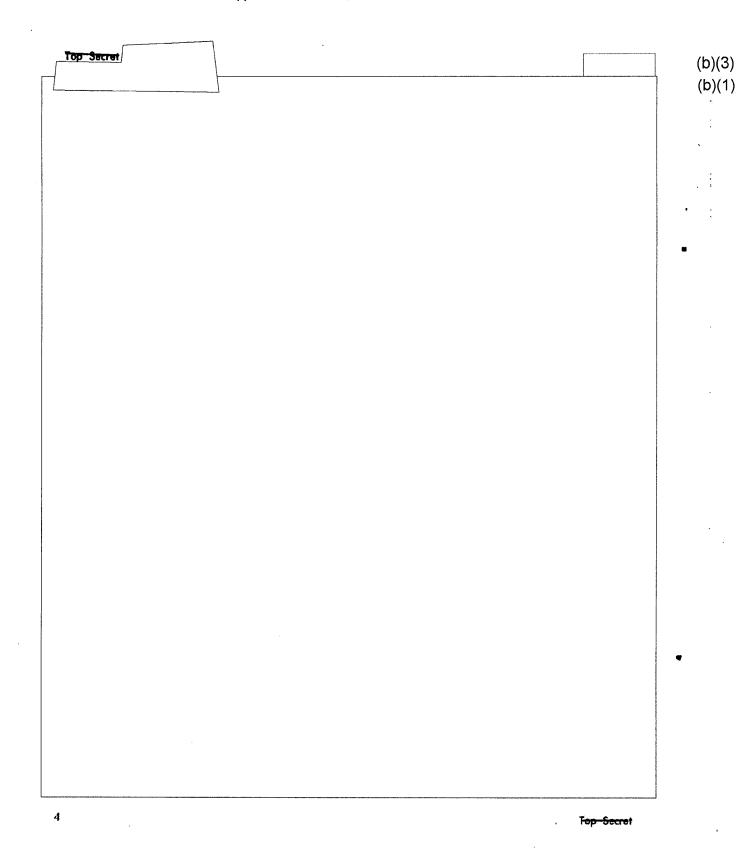
	Top Secret	(b)(3
		(b)(3
		(b)(´
		•
		•
	,	
		•
•		
•		
. ,	v Top Sucret	

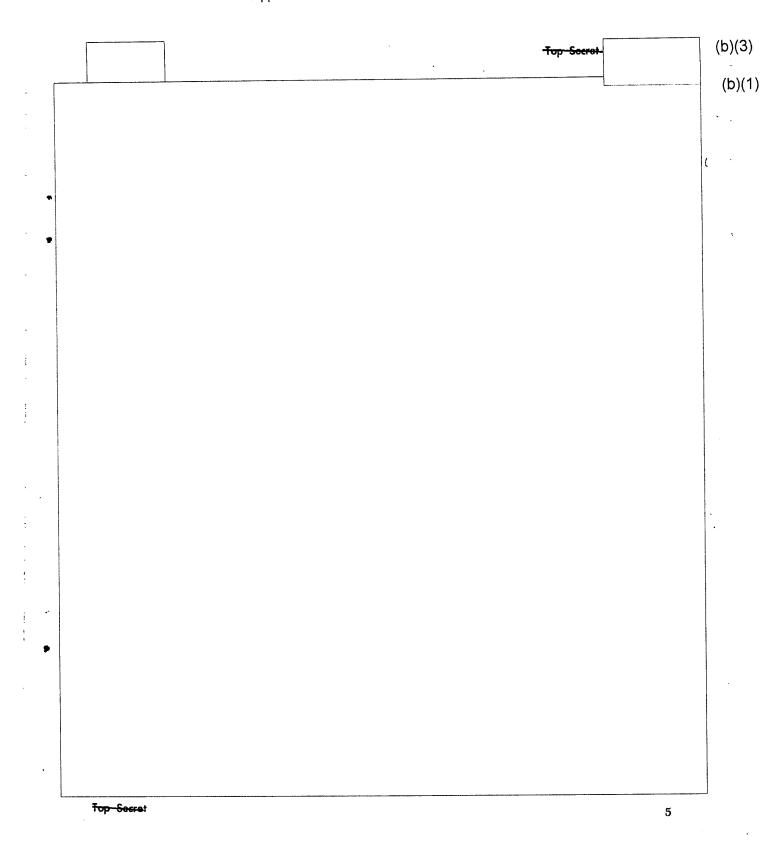
C06167875	Approved for Release: 2020/09/28 C06167875	v
		(b)(3
		(b)(1)
·		
·		
		•
·		
		~ ·
L		

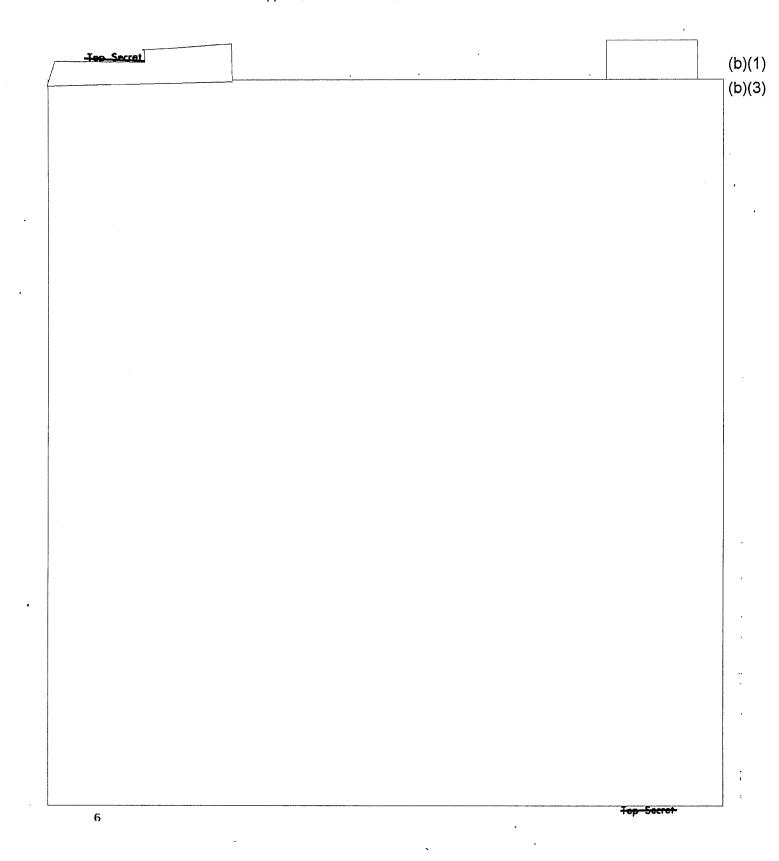
Top Socret	•	(b)(3)
		(b)(3
		х.
	·	(b)
-Top Secret		

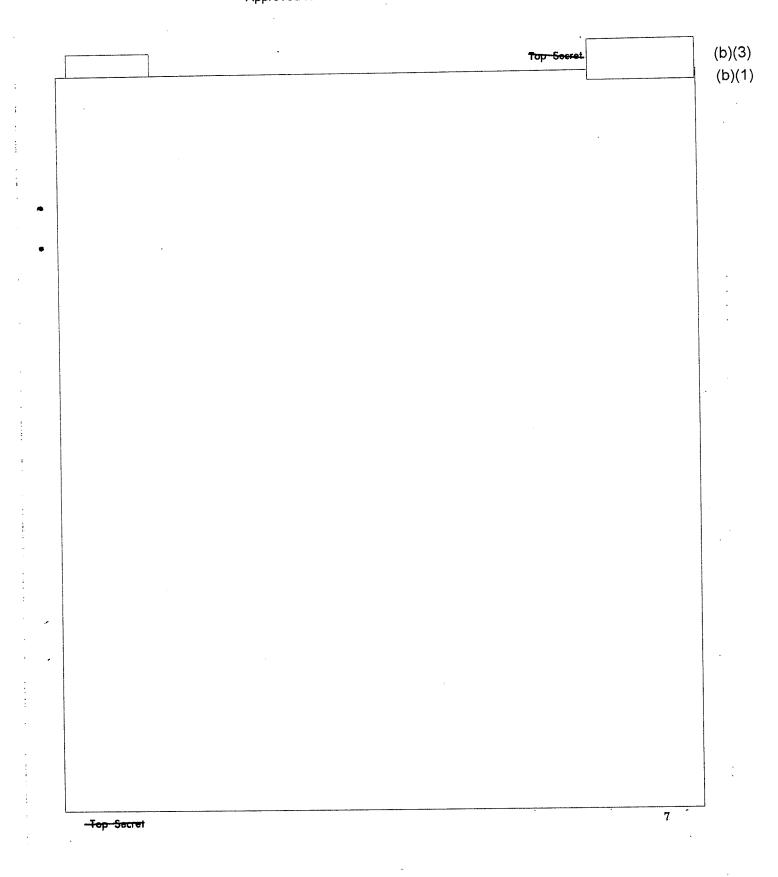




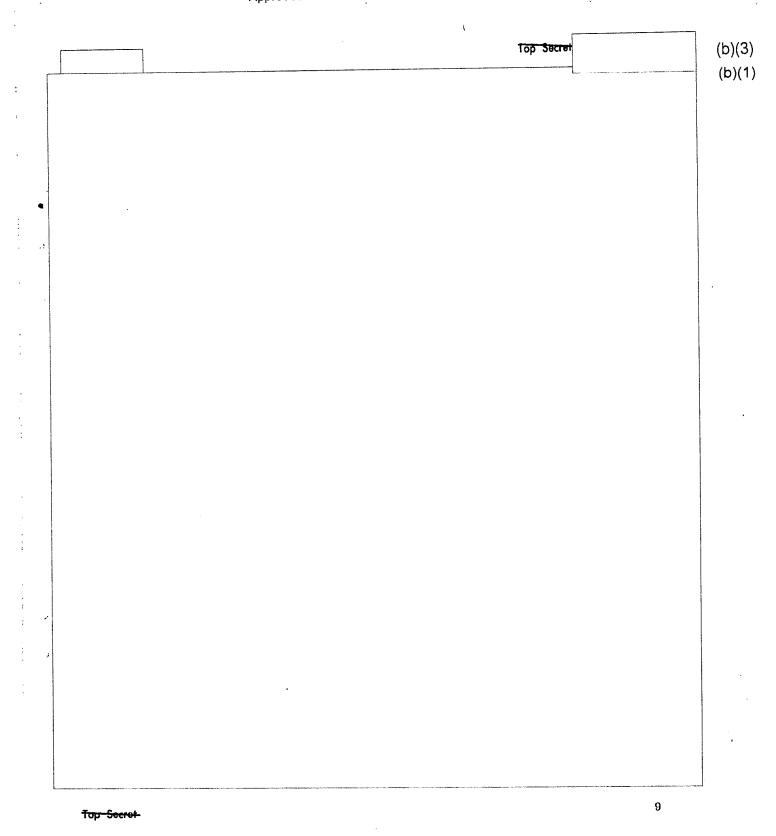


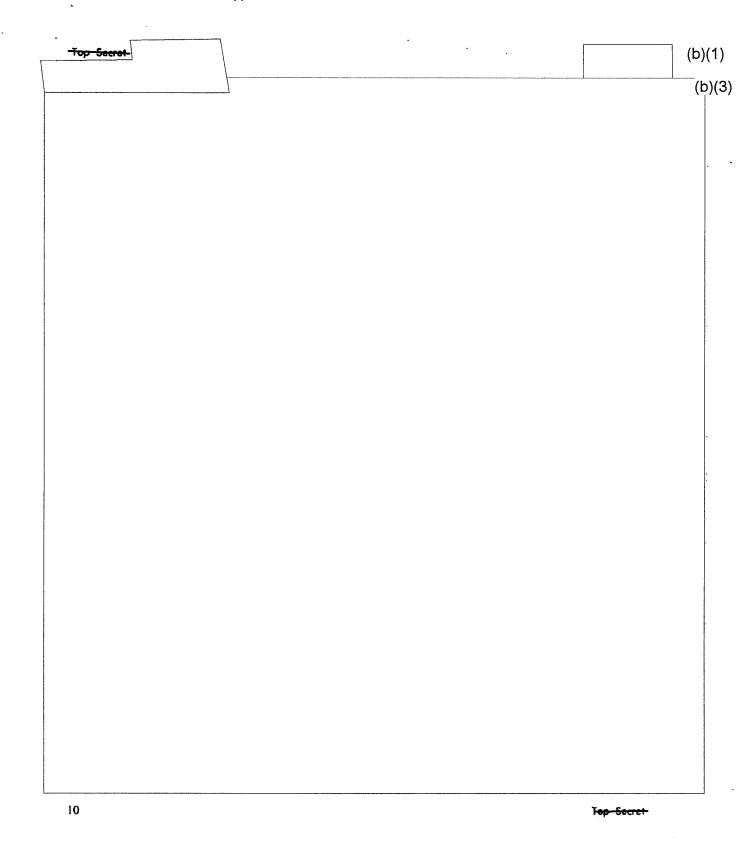


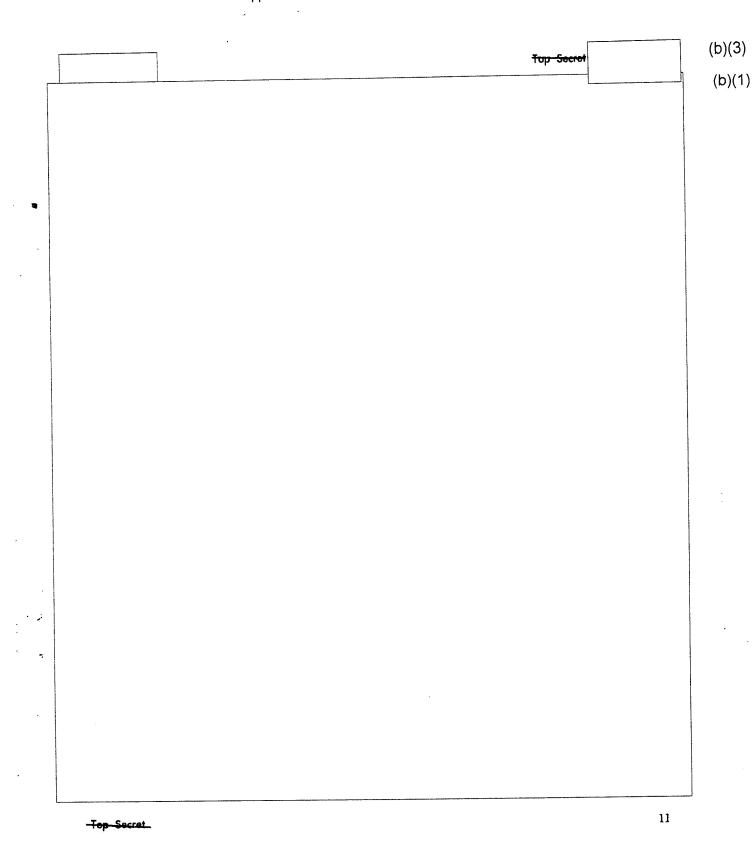




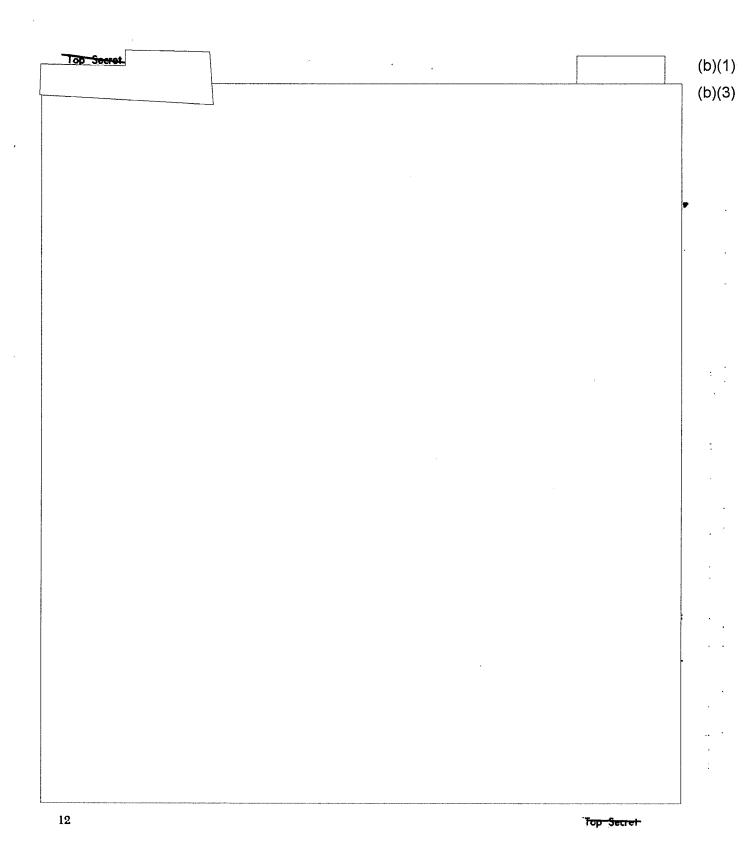
Top Secret	(I(b)(1)
	(b)(3)
	•
	·
•	
	•

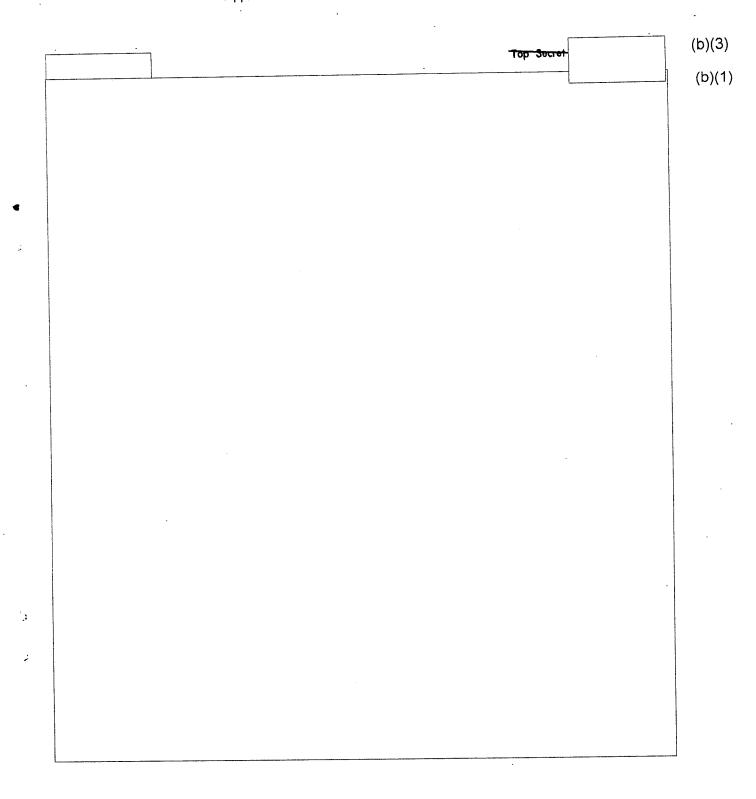






Approved for Release: 2020/09/28 C06167875





Top Secret

13

- CFG-17



(b)(3)

7 March 1978

MEMORANDUM

COSMOS 954, Crash of a RORSAT:
The Implications of Soviet
and Other Foreign Commentary

Introduction

World-wide attention has been directed to the activities of states in space following the malfunction of COSMOS 954, a Soviet "ocean surveillance radar satellite" that entered the atmosphere and impacted in Canada on 24 January. Most attention given by foreign media has been to the possibility of nuclear contamination and to the drama surrounding the subsequent search for portions of the satellite that survived reentry. Some of the commentary represents the sort of sensationalism that can be expected when any imperfectly understood subject receives sudden and intensive media attention and thus will probably be shortlived and perhaps of little consequence. Other issues raised, however, have the potential for more serious and longer term disruption of the generally benign environment in which the US and USSR have conducted space programs, especially reconnaissance.

Space programs, civilian and military, have for the most part gone unchallenged for some two decades. Almost all nations have apparently determined that either such challenges would be fruitless or that it is to their advantage not to contest the various programs. Most third countries actively share in the benefits of numerous nonmilitary related space programs and institutions--for

The author of this paper is	Strategic
Evaluation Center, Office of Strategic Resear and queries are welcome and should be directed	ch. Common to
	,

(b)(3)

(b)(3)

SR M 78-10062X

: (b)(3)

(b)(3)

-C-1

Sec. I

(b)(3)

instance, those related to weather forecasting and remote sensing of earth resources. These countries probably also find convincing, arguments that unrestricted space reconnaissance contributes to the stability of US-Soviet and other interstate relations. At the UN Outer Space Committee there even seems to exist a gentlemen's agreement that issues concerning the superpowers' military programs in space, reconnaissance as well as other types, will not be raised.

However, among the many themes that surfaced in available world-wide commentary in the aftermath of the crash of COSMOS 954, have been the following:

- --The Soviet satellite was a "spy satellite" designed for radar ocean reconnaissance of surface vessels and submarines.
- --An unacceptable level of secrecy surrounds superpower activity in space.
- --Either a UN Space Information Agency or some other legislation is needed to prevent programs like the COSMOS 954 from being kept secret.
- --A similar incident may occur again but with more dire consequences.
- --COSMOS 954 may have been shot down by a US "killer" satellite.
- --"Uranium generators" in satellites are in use because they are less vulnerable to destruction than solar panels.
- --US satellites with nuclear power units have also crashed.
- --The existence of a nuclear powered satellite is analogous to orbital weapons--which COSMOS 954 might have been--a line of reasoning which tends to focus on an issue dormant for a number of years.
- --The world in general, and the superpowers in particular, have become inured to the horrors of nuclear catastrophe.

- CLOSHIA

(b)(3)

--The entire event represented a rare display of superpower cooperation and both the US and USSR are to be commended.

It is the purpose of this memorandum to review world commentary on this event and to suggest possible future implications for US space programs.

The Soviet Announcement. The first public acknow-ledgment by the USSR that COSMOS 954 was in trouble came on 24 January in a TASS announcement, which noted that the satellite was a part of a program for the "exploration and use of outer space." A subsequent TASS announcement, which indicated that it was being carried by "all Soviet newspapers," noted that the satellite "was sharply depressurized for reasons as yet unknown on 6 January, this year, with the result that the satellite began to come down in a unplanned regime." [emphasis added]

Public Commentary

Spy Satellites. COSMOS 954 was generally referred to in Western commentary as a "Russian spy satellite," designed to track by "radar the movements of American Navy ships and submarines." The French, in particular, singled out for criticism the secrecy surrounding Soviet space programs. They noted that the name "COSMOS" merely corresponds to a label with the word 'Secret' written on it" and that the Soviets have so "nicknamed all tests which they wanted to remain unknown to their neighbors."

The East European states, as might have been expected, repeated the TASS announcement noting that the Soviet satellite was part of a program of "space research and utilization." The Yugoslavs, however, used the occasion to assert their independence of Moscow and to support their aspirations to leadership in the Third World. They referenced without comment Zbigniew Brzezinski's announcement that the ill-fated satellite "was a special satellite...intended for military purposes and that the Soviet Union had launched ten of these into orbit." Another Yugoslav commentator alluding to the commonality of superpower interests noted that:

- 3



(b)(3)

The two superpowers again do not want to ponder much over what is involved here, even less to inform us better about this [satellite reconnaissance]. Believe it or not they like to protect one another in certain of their secret activities although these secret activities are intended at least to scare one another.

Although some commentators did treat US-Soviet cooperation in positive terms, most were more circumspect. An English newspaper, the Guardian which referred to the incident as "a rare display of super-power cooperation on an issue where both sides have a vested interest in dangerous new technologies" noted, however, that "it took the Americans almost three weeks after first becoming aware of the possibility of a nuclear accident in space to tell other governments." The Parisian Le Figaro noted that Dr. Brzezinski "became much less talkative" when questioned about the satellite's mission.

It Could Happen Again. There seemed to be a general concern, that although the superpowers were reassuring about the low probability of a nuclear catastrophe, such could indeed happen. The London Daily Express, for instance suggested that the world had been given "a glimpse of the dangers that lunk in space" and that:

No ship has been designed that cannot sink, no aircraft that cannot crash, no manufacturing process that cannot go wrong, no engine that cannot seize up, no rocket that cannot explode, and we now know no orbiting satellite that cannot fall from the sky.

An Argentinian newspaper, the Buenos Aires Herald, suggested that:

To judge by the reactions of government officials in Washington, Moscow, and Ottawa, the unscheduled descent of a nuclear-powered Soviet satellite near the Canadian town of Yellowknife was a routine matter, certainly nothing to get worked up about. Less directly involved people, not inured yet to the possibility of dangerous radioactive material being dumped on them from

-4



C.C.

(b)(3)

the skies, are unlikely to be quite so sanguine. The chances of a major mishap may be slight, but they do exist nonetheless. What is dangerous is the rapidly increasing casualness with which the big powers' appear to be handling the colossal destructive power at their disposal.

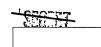
Killer Satellites. A number of press treatments raised the spectre of "killer satellites," a subject that was receiving much public attention even before the crash of COSMOS 954, albeit in a different context. A Chilean commentator suggested the Soviets were looking at the possibility that COSMOS 954 "was shot down by another satellite, perhaps a US satellite." Still another Chilean report suggested that the failure of a "self-destruction mechanism on board the satellite was particularly embarrassing" presumably because this suggested some inherent weakness in the Soviet ASAT program—the Soviet ASAT has been frequently reported in open sources, to self destruct on command thereby "killing" the target satellite. A Yugoslav commentator indicated that it is impossible to say what had caused the satellite to cease functioning. Interestingly, he seemed to imply some behind-the-scenes contention over the reasons for the failure of COSMOS 954 when he claimed—that:

The supposition that this [the object which collided with COSMOS 954] could have been, say, another artificial satellite--and I do not suggest one launched for this purpose, but simply another artificial satellite--of which there are hundreds orbiting the earth, is very unlikely.

A subsequent Yugoslav press report on 28 January, however, indicated that both the US and the USSR "for several years now have been intensively working on the production and constant improvement of 'satellite killers'" and that:

Several 'mysterious' crashes of satellites and space vehicles indicate that, in actuality, experimental work on antisatellite weapons is being carried out. Meanwhile, since up to now

-5-



SECTION

(b)(3)

both the 'attacking' and the 'attacked' satellites have belonged to one of the space powers, these 'accidents' have not gotten any publicity. The fact that COSMOS 954 experienced decompression...at the moment when it entered...the area where contact with it could not be maintained from Soviet territory, has evoked speculation that it was a 'casualty' of an American antisatellite weapon... Why the decompression occurred—whether due to a defect in the covering of the satellite, an accidental collision with some meteor or a portion of an earlier launched satellite, or due to damage from some American 'satellite killer'—for now remains a mystery.

The commentary of senior US officials as presented by the American media has probably served to strengthen speculation about a connection--at least among the uninitiated--between the crash of COSMOS 954 and a US ASAT program. The New York Times on 30 January linked the growing "arms race in space", the "Soviet spy satellite that accidentally entered the Earth's atmosphere over Canada", and the development of Soviet and US ASATs. The Washington Post in an article that headlined Secretary Brown's proposed "near doubling the US expenditures for outer space weaponry" indicated that the US "Vought program is only one of many satellite killer devices to be developed."

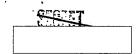
Although there is no explicit evidence that the Soviets believe or are even studying the possibility that COSMOS 954 was the victim of a US attack, it is likely that the possibility has been suggested by some in the Soviet Ministry of Defense. Secretary Brown in the previously cited Washington Post article noted that "An attack on an American satellite deep in space might go undetected,..." The fact that momentary "probing," to detect a satellite's capabilities and vulnerabilities can indeed so undetected is certainly known by the Soviets.

On 4 February, TASS

carried an interview with academician Leonid Sedov on the ill-fated COSMOS 954. Sedov claimed that: (b)(1) (b)(3)

(b)(3)

256.51



(b)(3)

Inasmuch as the process of depressurization was a fast one, it may be assumed that the satel-lite collided in flight with some other object of natural or artificial origin. [emphasis added]

This sort of rationale for the crash of COSMOS 954 was probably devised for its "face-saving" potential. Failure in this case--a collision with an unidentified object--is attributable to a cause beyond Moscow's control rather than to a mechanical problem which would be squarely within the USSR's responsibility.

The artificial linkage created in the press between the Soviet ASAT and the USSR's radar ocean reconnaissance satellite had other negative implications including some for the US. One Australian newspaper, The Age cited "some American defense officials" who believe that the Soviet Union "has already taken such a lead in military space technology [in space reconnaissance and space weaponry] that the strategic balance has been dangerously tipped against the US." Because of the USSR's purportedly significant lead over the US in space technology, President Carter's initiative on ASAT arms limitation and his call for a total ban on nuclear powered satellites were dismissed as "high flying optimism indeed." Subsequent Soviet press reporting seemed to suggest that the USSR was probably already laying the ground work for rejection of the US initiative on banning nuclear powered satellites.

TASS on two occasions reported favorably on the ongoing deliberations of the Scientific and Technical Subcommittee of the UN Outer Space Committee and singled out for commendation those who have indicated the "necessity" of "artificial earth satellites, including those having nuclear power facilities on board." In this connection, praise was extended to Bulgaria, Hungary, other Socialist states, and a US delegate to the UN, who reportedly said:

the use of nuclear-power plants in outer space is of great interest for the USA, and holds an important place in US outer space exploration programs.

-7-



SECTION AND ADDRESS OF THE PARTY OF THE PART

(b)(3)

A Treaty Violation? Some of the more stinging criticisms of the USSR were made by the Japanese Communist Party (JCP). Because of the Japanese public's strong aversion to nuclear weapons and related technology, the JCP is generally impartial when it comes to criticizing the nuclear aspects of superpower policy. The party newspaper Akahata reported that "if this [the COSMOS 954] was launched for a military purpose it violated the 'space agreement.'" The 1967 UN treaty on the Peaceful Uses of Outer Space, however, merely banned the orbiting of nuclear weapons or other means of mass destruction and so COSMOS 954 was not in fact a violation. In this regard the London Daily Express conjectured:

Is the nuclear powerplant the only potentially sinister thing on board? Could the Russians be sending up craft carrying orbital bombs?

Soviet Sensitivities. Soviet press commentary suggests the USSR was concerned over the extent of public condemnation and thus interested in deflecting criticism of its responsibility for the COSMOS 954 incident:

--Un 3 rebruary Fravaa informed its readers that the US space station, SKYLAB, was gradually losing altitude and "could strike the Earth in an unexpected area."

--Academician Sedov, on 4 February argued that the Soviet Union has strictly observed the provisions of the 1967 treaty on the principles guiding the activities of states in the exploration and use of outer space. He took pains to dispute what he described as "absurd accusations" by "many leading statesmen" and certain foreign media sources that the accident represented a threat to world peace. Assuring the public that there were not and "could not be" any weapons on board the satellite, Sedov charged "some circles" in the West with "undermining" the basic principles of international cooperation and trust.

--Veteran TASS political observer Yuriy Kornilov on 6 February accused "certain Western forces" of

-8-



CCCET

(b)(3)

attempting to use the satellite's fall as a "fresh excuse" for fanning an anti-Soviet campaign. Questioning the sincerity of those in the West who have expressed "concern" over the Soviet COSMOS incident, Kornilov noted that several accidents involving nuclear materials, which often created "real and sometimes very serious danger," could be attributed to failures on the part of the United States.

The Aftermath: First Rumblings

The initial call for international measures to increase control on space activities centered on the "nuclear aspects" of the COSMOS 954 incident rather than on the broader questions of space reconnaissance in general. The Canadians for instance indicated that they would propose to the UN Outer Space Committee that a "nuclear-free zone in near outer space" be created. The Swedish Foreign Minister expressed concern that "there does not exist any ban on the use of nuclear reactors in space, nor is there any obligation to inform those countries that may be threatened by a crashing satellite."

Prescriptive admonitions of a broader nature included Cairo's call for the establishment of a "UN Space Information Center" and the need for international legislation "forbidding any state from keeping secret any information such as that kept by the Soviet Union in the COSMOS 954 incident."

The most insistent demands for international legislation have come from the Japanese and in particular the Japanese Communist Party. The JCP on 7 February submitted a resolution to the Japanese House of Representatives that called for a total ban on military satellites. Among the factors cited in the JCP resolution were the following:

--three US "nuclear-loaded" satellites had already crashed; and

--on the average one satellite "falls to earth" every day.

-9-



GLUILI GLUILI

(b)(3)

The JCP recommended that Japan raise these and other issues at the UN General Assembly session to be held in May and at other international conferences as well. In particular the JCP argued the need for the following measures:

The [UN] treaty on space (ratified by the Japanese Government in July 1967) should immediately be amended so as to ban totally [the] launching [of] artificial satellites and the military use of space objects,...

The Government should investigate the true picture of all space objects, including satellites for military purposes, nuclear-loaded satellites and other artificial space objects and must make public the results of the investigation. [emphasis added]

At the UN. By and large, the deliberations in the UN Outer Space Committee have been on civil and peaceful uses of outer space. Until the COSMOS 954 incident, any discussion of military and intelligence programs was very carefully avoided. Following the COSMOS 954 crash, several countries, including Japan, Sweden, Canada, and West Germany raised the issue of nuclear satellites in the UN Outer Space Committee. The Japanese initially considered raising the explicit issue of military satellites but were persuaded that US and Japanese security was partially dependent on such systems.

Searching Inquiries. The French, who as noted earlier were critical of the secrecy surrounding Soviet space programs, published a fairly detailed study of radar ocean reconnaissance satellites as a result of the crash of COSMOS 954 and drew attention to

(b)(1) (b)(3)

"Irrational" Reactions. It seems likely that the effects of the COSMOS 954 incident will linger for some time and that many of the effects will be unpredictable

-10-



				•
(b)		S.U.L.		
(p)	**************************************	escentianismosticos escentisticos escentisticos escentisticos escentisticos escentisticos escentisticos escent	W Liberty Company of the Company of	
		• •	~	
		· · · · · · · · · · · · · · · · · · ·		
		-10a-		
		-10a-		
(b)(i				•

Approved for Release: 2020/09/28 C06167874

Crecal.

(b)(3)

(b)(1)

because of what may be described as the "irrational" reaction of third countries. A Caracas radio station for instance on 15 February, in the aftermath of the failure of COSMOS 954, reported the ostensible crash of a US satellite over Venezuelan territory.

The object entered Venezuelan skies and descended in a parachute. The people of Pregonero went to see the strange descending object and finally located it. It is an object that can be moved by two men with many cables, a motor and a long antenna.

It has US Air Force markings on a rubber protector and could possibly be a satellite for meteorlogical purposes.

Whatever actually landed--if anything--was definitely not a US satellite. Subsequent inquiries by who requested the return of any portions of the object that might have survived reentry met with a negative response by Venezuelan government officials, who seemed to know nothing of the incident.

Despite their clearly expressed interest, many states are not always knowledgeable nor arc their positions nocessarily rational when it comes to space matters. For example, developing nations interested in eventually having their own communication satellites in geostationary orbit have expressed concern about the possible overcrowding of that special orbit. Although the physical space involved is more than adequate to accommodate a very large number of satellites, the radio frequency interference problem makes proper spacing of satellites vital, thereby limiting the number of satellites that can usefully occupy the space. These countries have indicated the desire to "reserve" slots in geostationary orbit for their potential satellites so that when the satellites are ready, there will be room for them. Colombia, Indonesia and Ecuador have led a protracted debate in the UN Space Committee, on sovereignty over the geostationary orbit, citing it "as a scarce natural resource which exists exclusively by virtue of its physical relation to the gravitational phenomena generated by the earth and particularly by underlying territory."

In their view, the segments of the orbit lying above equatorial states were not in outer space but a separate and integral part of their national space.

-11-



<u> CCCIT</u>

(b)(3)

Conclusion

COSMOS 954 and the coincident press attention to anti-satellite weapons have served to focus world-wide attention on superpower activity in space. How far such concerns will be carried is difficult to foresee.

On the one hand, the very real contributions the superpower space programs have made for mankind are difficult to ignore. In addition, of the 157 nations of the world only nine--Andorra, Bhutan, Equatorial Guinea, Gambia, Grenada, Guinea-Bissau, San Marino, Sao Tome and Principe, and Western Samoa--do not use space data in some way at this time.* Thus it is clear that "non-launcher" nations have a real stake in all types of space activities and hence in maintaining the status quo in outer space. On the other hand, interest in space matters does not always imply knowledge or understanding of all the related issues. Should future mishaps occur, irrational overreactions like those generated by the COSMOS 954 incident cannot be ruled out nor is the fragile regime in space likely to withstand that sort of controversy for long. Further, manipulation of growing Third World awareness of space activities is likely. Those underdeveloped nations which generally pursue an independent foreign policy are likely targets for states seeking to use "space" - Yugoslavia for instance--to enhance their leadership credentials in the Third World. Thus, as indicated in world-wide press commentary, incidents like the COSMOS 954 crash carry at least the potential for disrupting the current regime in space and not necessarily because of a "real issue."

Six nations, in addition to the US and USSR--five of which are US allies--have developed their own launch capability or launch facilities: Australian, China, France, Italy, Japan and the United Kingdom. Analysis of the press reporting available from the US allies in this list

* "Use of space data" is quite broadly defined here, and does not imply that a country has an expressed interest in conducting independent activities in space, nor possesses a governmental body established to promote space research. Membership in organizations such as Intelsat or the World Meteorological Organization was sufficient to qualify a state for inclusion in this category.

-12-



Sec. 7

(b)(3)

suggests the existence of reservations or concern about the secrecy surrounding space programs. Although there are powerful incentives which will likely convince these nations to accept US guidance on sensitive space questions, other factors, for instance indigenous public opinion, may eventually divert these nations from a course which the US perceives as in its allies' interests. The French apparently intend to call for the creation of an international control agency that would use satellites to monitor disarmament agreements. Citing the failure of the US and the USSR to achieve a satisfactory disarmament agreement after years of effort, French President Giscard d'Estaign suggested that a new approach to nuclear and conventional arms control should involve all the nations of the world-not just the superpowers--under the United Nations. Should he follow through, the question of espionage from space will likely get a more thorough public review than ever before.

Although only the USSR has the means to destructively interfere with satellites, all states have it within their power to exert pressure on the superpowers through public condemnation of various space activities. Neither the US or the USSR could indefinitely remain immune to that type of pressure. They will find it increasingly difficult to ignore the perceptions held by most other countries of superpower space activities and will probably have to accommodate those views to some extent. Any move towards accommodation, be it public disclosure of sensitive space reconnaissance programs or some other form, is likely to become a contentious issue between the US and USSR. Given the competitive relationship that exists, each is likely to view the others concession as an example of "one-upsmanship" designed to curry favor amongst the Third World. Also the gentlemen's agreement that seems to exist whereby the US and USSR at least refrain from detailed discussion of space reconnaissance would likely fall victim to this sort of accommodation. Whether significantly enhanced world-wide knowledge of space activities will ultimately prove to be stabilizing or destabilizing is difficult to foresee.

-13-



SUBJECT:	COSMOS 954, Crash of Soviet and Othe	of a RORSAT: T r Foreign Comme	he Implication ntary
A STATE OF THE STA			•
			ý.

(h)(3)





Top Secret-

(b)(3)

540-4-10

Weapons Intelligence Daily Review

17 January 1978

Tob Sectes

17 January 1978

Copy

0

(b)(3)

	Top Secret	
	17 JANUARY 1978	
		NR F
•		
4	DEPORT ON SOUTET PORSAT	
STATUS	REPORT ON SOVIET RORSAT Cosmos 954, a radar o	cean
	reconnaissance satellite (RORSAT), is continui lose altitude. The satellite is expected to r the atmosphere on or about 23 January	ng to eenter
,		
	Cosmos 954 was launched on 18 September 1977.	
	RORSATs are a nuclear reactor, which normally is boosted in higher disposal orbit at the end of the satell collection mission.	owered by into a ite's
•		
	Top Secret	
34860/	78 -3-	011

C06863	055	Approved for Release: 2020/09/28 C	06863655		
					ningstrige og
				•	
		Top Secret			(b)(3
		17 JANUARY 1978			. (
		, 1 (S 1) (S 1		710	(þ)(
					(b)(3
i ve					
					100
		V			
				•	

A S		Top Secret			(b)(3
	34860/78	-4-		011	
	<u> </u>	÷			

6863655	Approved for Release: 2020/09/28 C0686	3655
	Top Socret	(b)(
	17 JANUARY 1978	
		(p)
•		
•		
		•
·		NR Rec
·		
	*	
·		
	Тор Зестет	(k
34860/78	-5-	011



(b)(3)

Weapons Intelligence

Jugano

Jugano

Jugano

Jugano

Jugano

Daily Review

11 January 1978

WI WINR 7R-007J

(b)(3)



(p)(3)

(b)(1)

(b)(3) (b)(1)

> (b)(3) (b)(1)

(b)(3)

Report No.

OFFICE OF WEAPONS INTELLIGENCE

Weapons Intelligence Daily Review

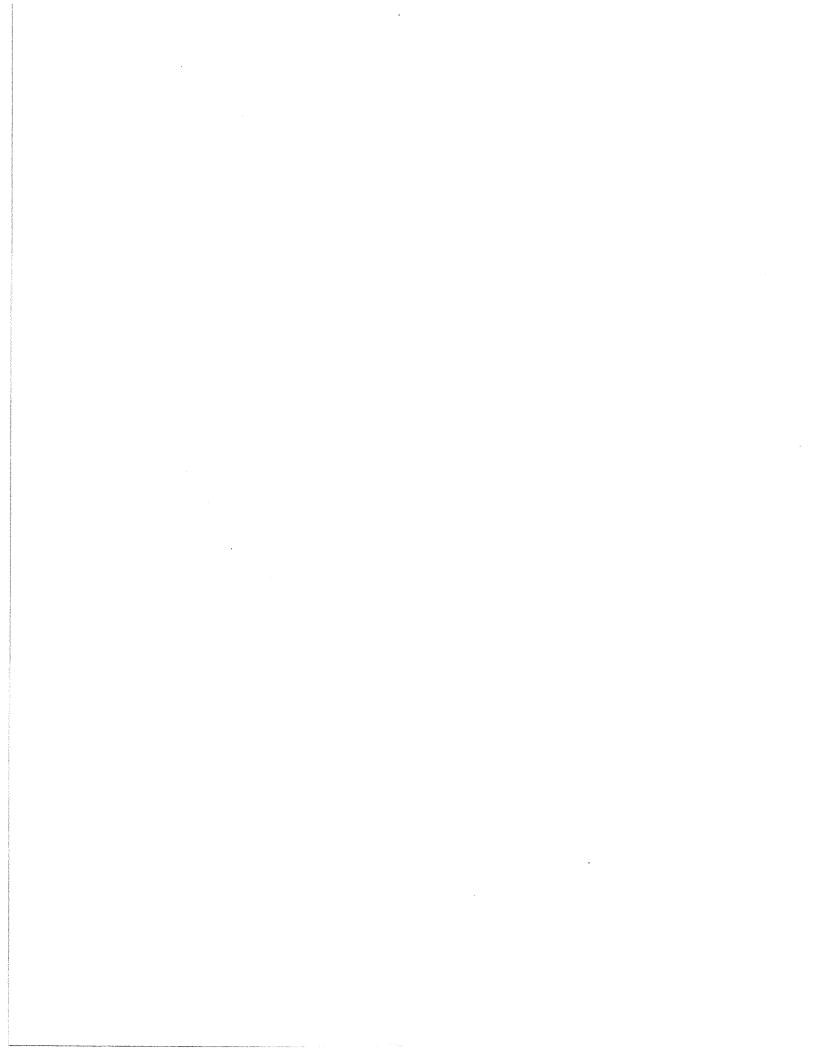
11 JANUARY 1978

SOVIET KORSAT BEGINS TO TUMBLE

34856/78

reconnais	sance sate	111te (RO	RSAT)	radar ocean	
				has start	ed to
STOWIN TU	mole. Pri	or to b J	anuary, th	e satellite	had
n 	A ITE ETAN	TITEV BUE	OMATICALI	r. CUSMUS JJ7	13
expected of Januar		the atmos	sphere du	ring the last	114.71
or Januar	у.				
the RORSA	li is power boosted to	ed by a n	storage	actor which i o <u>rbit at the</u>	end
of the sa	tellite's	collectio	n mission		

C06863654		Approved for Release: 2020/09/28 C06863654	
		Approved for Reliaded, 2020/00/20 Oddooddoo-	
	÷	Top Secret	(b)(3
		11 JANUARY 1978	(b)(3)
			(b)(3)
			• (b)(3)
			(b)(1)
		•	NR Record
			INIC RECORD
		•	
·			
			-
		•	
,			•
		Tup-Secret	(b)(3)
	34856/78	-2-	007
		,	





Approved for Release: 2020/09/28 C02992460

The National Intelligence

Daily

Published by the Director of Central Intelligence for Named Principals Only

TOP SECRET (b)(3)

326

Copy No.

FRIDAY 25 NOVEMBER 1977

VOLUME 4, NUMBER 273

_NR Record

NR Record

TOP SECRET

Approved for Release: 2020/09/28 C02992460

(b)(3)

(b)(3)

(b)(3)

(b)(1)

(b)(1)(b)(3) FRIDAY 25 NOVEMBER 1977

THE NATIONAL INTELLIGENCE DAILY TCS 773/77

WESTERN EUROPE THE PROPERTY DESCRIPTION OF THE PROPERTY OF TH NR Record **USSR: Satellite Problems** atmosphere as early as December.

If the automatic boosting mechanism were to activate while the vehicle is tum-The Soviets have not yet regained control of Cosmos 954, the radar ocean reconnaissance satellite whose command system has been malfunctioning bling, there is a strong possibility that the satellite would be forced into the at-mosphere prematurely at a time impossi-The satellite_continues gradually to lose altitude ble to predict. The satellite's automatic attitude con-The satellite's automate attitude control system

minimizes its orbital decay.

Continued operation of this system will enable the satellite to remain in orbit

| Should this system fail before the nuclear power source is boosted into high orbit, the entire satellite will begin tumbling and enter the earth's (b)(1) (b)(3)

(b)(1) (b)(3) **TOP SECRET**

THE NATIONAL INTELLIGENCE DAILY TCS 773/77	FRIDAY 25 NOVEMBER 107	7.02
		NR Reco
	,	

TOP SECRET

TCS 773/77

THE NATIONAL INTELLIGENCE DAILY FRIDAY 25 NOVEMBER 1977 Warning, NOTICE

Sensitive Intelligence Sources and Methods Involved

Sensitive Intelligence Sources and Methods Involved

SATIONAL SECURITY INFORMATION

Unestraycred Discipants Stateger to Criminal Sanctions

Ibs Notional intelligence Stateger to Criminal Sanctions

Ibs Notional intelligence Stateger to Criminal Sanctions

(Aff) Foreign Relicants

(Aff) Foreign Relica NR Record NR Record TOP SECRET Approved for Release: 2020/09/28 C02992460